A PRELIMINARY/RECONNAISSANCE REPORT

RE:

A PROPOSED EVANSTON, ILLINOIS MARINA

Prepared by:

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Chicago District
U.S. Army Corps of Engineers

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INTRODUCTION/OBJECTIVE

This is a preliminary reconnaissance-type report intended to briefly survey and summarize key issues/circumstances leading eventually to a decision whether or not to further investigate the environmental, engineering and economic feasibility of a proposed marina in Evanston, Illinois,

The capsule canvass of key findings reported here represent a response to a request by the Mayor of Evanston, Illinois for an independent, unbiased study, at a Stage I level, of the feasibility of creating a small boat harbor/marina within the municipality's environs (in the vicinity of South Boulevard near Calvary Cemetery).

It is a top-line report meaning that only the most important findings, at this early stage of study, are presented. However, in each of the main topical areas enumerated below, exhibits are referenced, which provide supporting detail/refinements, and which are collectively presented in a concluding Appendix. The areas evaluated are:

A. Survey of Potential Demand for Marina Slips

B. Attitudinal/Perceptions Survey of Area Residents Re: Impacts of the Proposed Marina

C. Conceptual Plan (Rough Sketch of Proposal) of Harbor/Marina

D. Evaluation of the Traffic Impact Study of the Proposed Marina

E. Investigation of Selected Environmental Issues (Water Quality, Fuel Contamination, Silt Build-Up, etc.)

F. Comment on Revenue/Cost Estimates and Project Financial Feasibility

G. Conclusion

H. Recommendation

A. Survey of Potential Demand for Marina Slips

Key components of the survey design and the main findings are summarized below:

1. Survey Objectives

This survey aimed to determine the potential demand for wet slip space by present and prospective recreational boat owners at a possible future marina at Evanston, IL (in the vicinity of South Boulevard near Calvary Cemetery). The survey was designed to yield findings that would contribute, in part, to an assessment of the feasibility of a proposed shoreline development plan at that location.

Specific Information Needs

The clear emphasis here was on determining incremental or additional demand associated with the presence of the Evanston Marina and not on existing demand, which might be switched from other marinas within the study area.

A subordinate **Information Need** was to determine for those respondents in each component of demand, the average annual (seasonal) wet slip rental fee that they would be willing to pay, in current dollars, at a future Evanston, Illinois marina development.

2. Qualified Respondents

Sub-Sample #1

Registered recreational boat owners who resided within a (30) mile travel distance of Evanston, Illinois. Lists of registered recreational boat owners were obtained by the Corps from the appropriate state agency for the following counties:

Illinois

Cook	Lake
Dupage	McHenry

The following number of related records was conveyed to the survey contractor:

Illinois

127,000

The actual size of the "working" universe, from which the sample was drawn, was reduced from the number shown due to the need to conform the sampling universe to the land mass description shown below under **Sample Design**.

Sub-Sample #2

Study area residents (heads of household) who were non-boat owners and who resided in zip code areas with relatively high concentrations of boat owners.

3. Sample Design

The sample universe, in terms of landmass, is configured by a partial circle, which includes an area in NE Illinois, which has Evanston, Illinois at its center and is described by a land radius of approximately thirty (30) miles.

The sampling protocols for the sub-samples of the two (2) components of demand and their respective qualified respondents follow:

Sub-Sample #1

An area probability sample (systematic random) was drawn from an Illinois list of recreational boat-owner registrants who resided within the specified sampling universe area.

Sample size of 800. Expected margin of error: ± 4% at the 95% level of confidence.

Sub-Sample #2

An area probability sample (systematic random) was drawn from a telephone universe of listed and unpublished residential numbers, i.e., Random Digit Dialing (RDD), in zip code locations within the specified sampling universe, where there were relatively high concentrations of boat owners.

Sample size of 400. Expected margin of error: ± 5-7% range at the 95% level of confidence.

4. Extrapolations Based on Key Survey Findings

Boat Owners

There is a component of current boat owners in the Study Area that represents a **POTENTIAL DEMAND** for wet slip space at a possible future harbor marina at Evanston, based upon the following distillate (**mid-point approximations of error ranges**) of extrapolations:

- Identified as "**Very Interested**" in a possible new harbor at Evanston (assuming reasonable prices):
  - Among all boat owners in sampling universe: 4,400
  - Among owners of 20+' length boats: 1,950

- Stated that renting space at Evanston would represent **incremental** and not replacement **demand**:
  - Among all boat owners in sampling universe: 1,000
  - Among owners of 20+' length boats: 550
  - Of the 550 owners of 20+' length boats extrapolated as the **incremental demand** component, fifty (50) per cent, or **275**, expressed an interest in the current Chicago Park District Slip Rental Pricing Schedule.

- Specified **25 feet** as the preferred slip length size:
  - Among all boat owners in sampling universe: 3,600
  - Among owners of 20+' length boats: 1,350 (with 30 feet length at: 1,200)

- Estimated the average (for all slip lengths) boating **season costs** at Evanston at:
    - Among all boat owners in sampling universe: **$1,950**
    - Among owners of 20+' length boats: About the same, but with recognition of higher costs as boat lengths increase.

- Identified as "Very Interested" in the current Chicago Park District Slip Rental Pricing Schedule ranging from **$1700 to $3600** (depending on boat length):
    - Among all boat owners in sampling universe: 3,600
    - Among owners of 20+' length boats: 1,350

Non-Boat Owners

The questionnaire was designed to winnow/ filter out non-boat owners who would definitely/ probably not buy a boat. Similarly, the questionnaire identified respondents who were definitely not interested in a prospective harbor marina at Evanston, and these were filtered out as well.

What remained was a very small (in percentage terms) distillate of non-boaters who expressed some level of interest in buying a boat, in renting a future wet slip at Evanston, and in considering the rental-pricing schedule now in current use at Chicago Park District Marinas. These small-percentages were then applied, first, against the very large Study Area base of non-boat owners, 29,530, and, second, against the imputed sub-set of non-boat owners who would fall, prospectively, into the 20+' boat length category, 7,200.

The **POTENTIAL DEMAND** profile (using **mid-point approximations** of error ranges), for the prospective 20+' boat length category, follows:

- "Very Interested" in renting a slip at a new harbor in Evanston: **135**

- Estimated season boating costs at an average of: **$1,500**

- "Very Interested" in a boating season pricing schedule that varied, by boat length, from $1,700 to $3,600: **90**

5. Summary Evaluation of Demand Survey Findings

On balance, viewed in isolation (apart from the determinations of other project feasibility studies currently in progress), the findings of this survey sustain the conclusion that there is a sufficient **DEMAND POTENTIAL** to support investment in a continued evaluation of the feasibility of a lakefront harbor/marina in Evanston.

B. Attitudinal/Perceptions Survey of Area Residents Re: Impacts of the Proposed Marina

1. Survey Objectives

This survey aimed to determine Evanston residents' perceptions of the environmental/economic impacts of a possible prospective marina site on the City's shoreline. Perceptions were also elicited from present recreational boat owners, and other respondents. The survey was designed to yield findings that would contribute, in part, to an assessment of the feasibility of a proposed shoreline development plan.

Specific Information Needs

To elicit perceptions from qualified respondents (specified later) of the:

Environmental Impacts Concerning:

- Water Quality Changes
- Fuel (oil/gas) Discharges
- Water Circulation
- Silt Build-Up
- Noise Level Changes
- Traffic Congestion
- Parking Issues
- Aesthetic Changes to Lake-Front
- Other

Economic Impacts Concerning:

- Incremental Revenues Generated

  By Taxes Imposed on Marina Operations
  By Boat Fees/ Assessments
  Other

- Incremental Costs Incurred By

  By Security Services
  By Facility/ Grounds Maintenance
  Other

2. Qualified Respondents

Male/ Female heads-of-households who were residents of Evanston for at least the last twelve (12) months.

3. Sample Design

A systematic random (probability) sample was drawn using Random Digit Dialing of residential telephone subscriber listings of subscribers who were domiciled within the City of Evanston proper.

Sample size required was 400. Expected margin of error fell within the range ± 5-7% at the 95% level of confidence.

4. Key Findings

Opposition to the proposed lakefront harbor marina, on environmental grounds, was the dominant, over-arching, prevailing view among survey respondents. Those who oppose tend to hold their views/ attitudes strongly.

- Specifically, the following potential problem areas, associated with the proposed marina, registered substantial pluralities in the survey response counts:

    - Traffic Congestion/ Parking
    - Higher Noise Levels
    - Oil/ Gas Discharges
    - Impaired Water Quality

- The highest response totals, in the "oppose" market segment, came from survey respondents with this profile description:

    - Women, when compared to men.
    - Homeowners, when compared to renters.
    - Non-Boat Owners, when compared to boat owners.
    - Live within three (3) blocks of the Lake, when compared to those who live three (3) to six (6) blocks from the Lake or over six (6) blocks from the Lake.
    - Live South of Church Street, when compared to those who live North of Church Street
    - Live West of Ridge Avenue, when compared to those who live East of Ridge Avenue
    - Live in the South-West Quadrant of Evanston (West of Ridge Avenue and South of Church Street), when compared to any one (1) of the other three (3) quadrants.

- There is, however, no blanket, unequivocal opposition to Evanston Lake-Front development/ expansion. The following development options registered substantial "in favor" pluralities:

    - Expansion of Beaches
    - More Parks and Green Space

- From an economic perspective, the proposed project is viewed more favorably, with the following attendant advantages, recognized by respondents, as potential positive accruals for the undertaking:

    - Contribution to City Revenues Through Taxes/ Fees on Marina
    - Stimulus to Local Business
    - Creation of Jobs in Evanston

5. Summary Evaluation

On balance, viewed in isolation (apart from the findings of other feasibility studies currently in process), the findings of this survey of Evanston residents only, per se, do not appear to support investment in a continued evaluation of the feasibility of a lakefront harbor/ marina in Evanston.

C. Conceptual Plan (Rough Sketch of Proposal) of Harbor/Marina

Based on preliminary marina wet slip demand, layouts were prepared detailing breakwater and slip configurations, and also included satellite and adjacent parking options.

At this preliminary stage of study, the Corps relies on existing data, to the extent possible. The District is currently working on the design of a very similar small boat harbor for Whiting, Indiana, of approximately the same size. One Whiting design is for a harbor with capacity for 378 boats. This is very close to the projected demand for the Evanston marina. Therefore, this design was modified slightly, relocated to the Calvary Cemetery location, and used as the model for the preliminary Evanston Harbor design. The rubble mound breakwaters for the harbor will have a crest height of 15 feet above the Low Water Datum (LWD), with a crest width of 20 feet. This crest height is lower than for Whiting Harbor, as the wave climate at the Evanston location is not expected to be as severe as that at the Whiting site. The harbor will extend lake ward for about 650 feet and will extend along the shore for about 1,300 feet, and will have an area of approximately 19 acres.

One problem with the Evanston Harbor location is parking. There does not appear to be any area nearby adequately sized to accommodate the vehicles expected at the harbor. Therefore, one design calls for lake fill to create a parking lot immediately lake ward of the current shore. This parking lot will extend into the lake for approximately 65 feet, and will be approximately 1,400 feet long (with a total area of about 2 acres). This parking lot should accommodate approximately 310 automobiles. A second design assumes satellite parking somewhere in the vicinity of the harbor, with shuttle service, but it is not very likely that the assumed satellite parking areas will be found.

It is estimated, at this juncture, that project costs would approximate $18,000,000-$20,000,000.

D. Evaluation of the Traffic Impact Study of the Proposed Marina

An analysis of the impact of marina traffic on the normal traffic patterns in the vicinity of the harbor was completed by an independent contractor, the Northwestern University Transportation Program staff of the Civil Engineering Department.

The analysis was performed using standard traffic engineering traffic simulation assignment tools (CORSIM - FHA software packages) as well as road capacity analysis (HCS) procedures. Both models are in wide use in the United States.

First, the **Base Case Traffic Conditions** were evaluated, and then, 2 future "with harbor traffic conditions" were evaluated. Then, the **Worst-Case Conditions** were evaluated – the Worst Day Peak hour base traffic volumes with the worst-case marina traffic superimposed on this peak base traffic volume. Finally, the **Expected Conditions** were assessed – the most likely marina traffic superimposed on the Worst Day Peak hour base traffic.

The study findings are summarized next:

- Marina generated traffic demand delay time increase is negligible under the worst case.

- The 'Level of Service' is unchanged by additional traffic.

- No traffic signal is warranted at the marina ingress/egress location.

- Marina-generated traffic demand results in statistically identical delay times as those computed for the most likely scenario.

    Example: For the most heavily traveled intersection (Sheridan & South Blvd.) the average delay per vehicle is increased from 19.14 seconds to 20.12 seconds for the worst scenario.

An estimate of increased/decreased air emissions was also made for the peak one hour of traffic interaction. For the most likely scenario, for 1.5 vehicles/boat, estimates were calculated for three contaminants (hydrocarbons [HC]; carbon monoxide [CO]; and nitrous oxide [NO]). Readings are given in grams/mile:

HC – decreased 0.06 grams/mile (from 0.50 to 0.44)
CO – increased 3.64 grams/mile (from 37.53 to 41.17)
NO – increased 0.24 grams/mile (from 1.94 to 2.18)

Increases in noise pollution should be commensurate with the increase in traffic delays and the increase in base traffic load. Because the increase in traffic delays was found to be negligible, and the increase in traffic load was marginal, it follows that increases in noise pollution would also be expected to be insignificant.

The independent contractor concluded: "Therefore, we do not expect any impacts, spatial or temporal, due to the attracted traffic by the proposed marina."

Obviously, no impacts are expected during those times when the marina is not operational.

E. Investigation of Selected Environmental Issues (Water Quality, Fuel Contamination, Silt Build-Up, etc.)

1. Several aspects were examined and reviewed pertaining to concerns relating to recreational boating and marinas. To illustrate the wide range of this initial exploratory investigation, the subjects/issues addressed are enumerated below:

- Clean water and clean marina legislation
- State and county clean marina programs
- Marina operators' support of the clean marina programs
- Potential pollution and related problems at marinas
- Management measures and best management practices (BMPs)
- USEPA benefit analysis of clean marinas (1995)
- Aesthetics
- Traffic delays

2. The conclusions drawn from this preliminary investigation are summarized, in large part, in the following quotation from the report:

"There are many convergent factors marshaled towards protecting water quality and the environmental values of water bodies which are focused directly towards boaters and marinas. Water quality legislation, Federal, State and local, is one of these factors. There are many laws, many strictly enforced, which prohibit pollution of open water bodies. Many of these have been enacted since the Federal Clean Water Act of 1972, and more have been enacted since the inception of the Coastal Zone Management Program in the early 1980's. More so than just because of legislation, boaters and marina operators have come to realize, particularly through education, that clean water significantly benefits boaters by enhancing the recreational boating experience. Clean water and clean marinas are much preferred by boaters and marina operators. Many marina operators, in particular, have become clean water advocates, going even further than operative legislation requires to maintain clean water. They realize that clean marinas are much more aesthetically pleasing to all involved, boaters, marina operators and workers, and it is definitely good for business. While there are certainly costs involved with keeping marinas clean, studies have shown that the benefit-cost ratio is greater than one, and the operators certainly are attuned to that. However, that is not the only reason they have come to focus more attention on maintaining clean marinas – it turns out to be a win-win situation for all involved."

F. Comment on Revenue/Cost Estimates and Project Financial Feasibility

At this early reconnaissance study stage of project development, neither benefit/cost nor collateral financial analyses have been prepared. If, after such preparation, it is determined that the proposed project meets requisite standards for federal participation, then a cost sharing arrangement becomes relevant.

At this preliminary juncture, it would appear that annual slip rental revenues could fully fund debt service. This assertion is based on at least two assumptions: (1) That the estimated potential slip demand is achieved, and (2) That the credit rating of Evanston bonded debt would result in annual debt service at a level roughly equivalent to that associated with a 25-30 year AA-rated security.

G. CONCLUSION

There are environmental concerns associated with a small boat harbor/marina development, but there are legislative safeguards in place to encourage (in some instances mandate) clean marina programs. From an economic perspective, the demand potential has now been documented and is affirmative. Viewed from an engineering perspective, the "Conceptual Plan" represents an early stage "can be done" assessment.

H. RECOMMENDATION

Therefore, it is **Recommended** that:

> Support programs and related commensurate funding be authorized by the City to continue and intensify evaluation of the feasibility of a lakefront harbor/marina in Evanston.